

WHAT IS CLAIMED IS:

- 1 1. A lubricant dosing apparatus for injecting a dosed amount  
2 of a lubricant into a pressurized airflow, comprising:  
3 a lubricant container adapted to contain a lubricant  
4 therein;  
5 a pneumatically actuatable lubricant pump having a  
6 pump inlet connected to said lubricant container and having  
7 a pump outlet;  
8 an injection channel connected to said pump outlet;  
9 a non-return valve that is interposed between said  
10 pump outlet and said injection channel and that is adapted  
11 to close said pump outlet and to selectively temporarily  
12 open said pump outlet responsive to a pressure of the  
13 lubricant to allow the lubricant to flow from said pump  
14 outlet to said injection channel; and  
15 an electronic sensor that is arranged adjacent to said  
16 non-return valve so as to sense at least one of a position  
17 and a stroke travel of said non-return valve, and that is  
18 adapted to emit an electrical signal responsive to and  
19 indicative of said position or said stroke travel.
- 1 2. The lubricant dosing apparatus according to claim 1,  
2 wherein said sensor comprises an inductive proximity  
3 sensor.

1 3. The lubricant dosing apparatus according to claim 1,  
2 wherein said sensor comprises a capacitive proximity  
3 sensor.

1 4. The lubricant dosing apparatus according to claim 1,  
2 wherein said non-return valve comprises a valve head that  
3 selectively covers and uncovers said pump outlet, a  
4 protruding valve plug that protrudes from said valve head  
5 and that selectively plugs into and unplugs from said pump  
6 outlet, and a valve stem that extends from said valve head  
toward said electronic sensor, wherein an axial length of  
said valve plug protruding from said valve head determines  
a minimum required magnitude of said stroke travel of said  
non-return valve for opening said pump outlet, and wherein  
said electronic sensor senses said at least one of said  
position and said stroke travel of said valve stem of said  
non-return valve.

1 5. The lubricant dosing apparatus according to claim 1,  
2 further comprising a removable and exchangeable annular  
3 spacer disk that is arranged circumferentially around said  
4 non-return valve, and that has a thickness which determines  
5 a basic spacing distance between said electronic sensor and  
6 said non-return valve.

1 6. The lubricant dosing apparatus according to claim 1,  
2 further comprising an electronic evaluating unit and an  
3 electrical conductor connecting said electronic sensor to

4 said evaluating unit so as to conduct the electrical signal  
5 from said electronic sensor to said evaluating unit, and  
6 wherein said evaluating unit is adapted to evaluate the  
7 electrical signal and responsive thereto emit an evaluation  
8 signal indicative of a proper or improper functioning of  
9 said apparatus.

1 7. The lubricant dosing apparatus according to claim 1,  
2 wherein said lubricant pump is a piston pump comprising a  
3 cylinder, a pneumatically actuatable piston movably  
4 arranged in said cylinder, a needle bushing having a bore  
5 therein, and a dosing needle that is movably guidedly  
6 arranged in said bore of said needle bushing and that is  
7 connected to said piston, wherein said pump inlet  
8 communicates into said bore of said needle bushing and said  
9 pump outlet communicates out of said bore of said needle  
10 bushing, and wherein said piston and said dosing needle  
11 together are adapted to repeatedly successively carry out  
12 a working stroke, and for each said working stroke a  
13 defined dosed quantity of the lubricant flows from said  
14 container through said pump inlet into said bore of said  
15 needle bushing and is injected from said bore through said  
16 pump outlet into said injection channel by said dosing  
17 needle.

1 8. The lubricant dosing apparatus according to claim 7,  
2 wherein said defined dosed quantity of the lubricant is a  
3 fixed non-adjustable quantity determined by at least one of

4 dimensions of said bore and a stroke distance of said  
5 working stroke.

1 9. The lubricant dosing apparatus according to claim 1,  
2 wherein said lubricant pump is a piston pump comprising a  
3 cylinder, a pneumatically actuatable piston movably  
4 arranged in said cylinder, and a compression spring that  
5 applies a pre-stressing force to said piston so as to bias  
6 said piston toward a resting position, and wherein said  
7 piston is only moved from said resting position to a  
8 working position when compressed air, which has at least a  
9 defined pressure that is sufficient to apply to said piston  
10 an actuating force greater than and oppositely directed  
11 than said pre-stressing force, is introduced into said  
12 cylinder.

13 10. The lubricant dosing apparatus according to claim 9,  
14 wherein said piston moves from said working position to  
15 said resting position due to said pre-stressing force when  
16 said defined pressure is relieved, and wherein said  
17 lubricant pump injects a dosed quantity of the lubricant  
18 from said pump outlet into said injection channel when said  
19 piston moves from said working position to said resting  
20 position.

21 11. The lubricant dosing apparatus according to claim 1,  
22 further comprising a main channel including a main channel  
23 inlet and a main channel outlet, and a first pneumatic

4 valve connected to said main channel inlet so as to  
5 selectively provide pressurized air through said main  
6 channel inlet into said main channel to form a pressurized  
7 airflow flowing through said main channel and out from said  
8 main channel outlet, and wherein said injection channel  
9 communicates into said main channel so as to introduce the  
10 lubricant from said injection channel into the pressurized  
11 airflow in said main channel.

1 12. The lubricant dosing apparatus according to claim 11,  
2 further comprising a second pneumatic valve connected to  
3 said lubricant pump so as to selectively provide  
4 pressurized air to actuate said lubricant pump.

1 13. The lubricant dosing apparatus according to claim 12,  
2 further comprising a single air inlet that is adapted to be  
3 connected to an external source of pressurized air, and  
4 that communicates with both said first pneumatic valve and  
5 said second pneumatic valve.

1 14. The lubricant dosing apparatus according to claim 12,  
2 wherein said first pneumatic valve and said second  
3 pneumatic valve are separately actuatable independently of  
4 one another.

1 15. The lubricant dosing apparatus according to claim 12,  
2 further comprising a computer controller that is connected  
3 for control signal transmission to said first pneumatic

4 valve and to said second pneumatic valve, and that executes  
5 a control program to controlledly actuate said first  
6 pneumatic valve and said second pneumatic valve.

1 16. The lubricant dosing apparatus according to claim 12,  
2 further comprising a valve monitor connected only to said  
3 first pneumatic valve and adapted to monitor a proper or  
4 improper operation of said first pneumatic valve.

1 17. The lubricant dosing apparatus according to claim 1,  
2 further comprising an apparatus housing, a lubricant  
3 filling port in said housing, and a specialized lubricant  
4 fill fitting connected to said housing and communicating  
5 into said lubricant filling port, wherein said lubricant  
6 container is connected to said housing and has a fill  
7 opening communicating with said lubricant filling port.